means for determining a set of intersection points, wherein the intersection points are those points where the one or more first curves intersect the continuous second curves and which lie on the boundary of the surface;

means for determining a set of crossover points from the set of intersection points;

means for selecting unmarked adjacent crossover points from the set of determined crossover points to a form a closed loop;

means for marking the selected adjacent crossover points; and

means for repetitively performing the operations of said selection means and said marking means until a set of closed loops have been formed, wherein the set of closed loops abuts a substantial portion of the boundary of the surface and forms a modified typeface, font, or character.

REMARKS

This application has been carefully reviewed in light of the Office Action dated September 27, 2001 (Paper No. 8). Claims 1 to 57 are in the application, with Claims 1, 18, 35 and 52 to 57 being the independent claims. Reconsideration and further examination are respectfully requested.

The drawings were objected to for informalities. A Request For Approval Of Drawing Changes accompanies this amendment, which proposes to correct the drawings to attend to the issues raised in the Office Action. In addition, the specification has been amended for consistency with the drawings. No new matter has been added. Approval of

the Request For Approval Of Drawing Changes and withdrawal of the objection to the drawings are respectfully requested.

Applicant thanks the Examiner for the indication that Claims 7, 10, 15, 16, 24, 27, 32, 33, 41, 44, 49 and 50 contain allowable subject matter and would be allowable if rewritten in independent form. Applicant has not rewritten these claims in independent form, however, since it is believed that all the claims in the application are in condition for allowance, as discussed in more detail below.

Claims 1 to 6, 8, 9, 11, 12, 18 to 23, 25, 26, 28, 29, 35 to 40, 42, 43, 45 and 46 were rejected under 35 U.S.C. § 102(e) over U.S. Patent No. 5,701,404 (Stevens); and Claims 13, 14, 17, 30, 31, 34, 47, 48 and 51 to 57 were rejected under § 103(a) over Stevens in view of U.S. Patent No. 5,805,783 (Ellson). Applicant has carefully reviewed the Examiner's remarks and the applied references and respectfully submits that the claims herein are patentably distinguishable over the applied references for at least the following reasons.

The present invention concerns the transformation of a surface, the boundary of which is defined by a set of one or more closed curves. The transformation is accomplished by providing a set of continuous curves on the surface that intersect with the set of one or more closed curves. Using the points where the closed curves and the continuous curves intersect, a set of crossover points is determined. Curve intervals, which are delimited by the crossover points, are selected from the set of one or more closed curves and the set of continuous curves in accordance with a predetermined rule to form a set of closed loops. The set of closed loops abuts a substantial portion of the boundary of the surface and represents the transformed surface. In this manner, the surface can be

transformed using a set of curves while substantially retaining the overall shape of the original surface boundary.

With reference to the claim language, independent Claims 1, 18 and 35 concern transforming a set of one or more closed first curves defining a boundary of a surface to a set of a plurality of closed loops, where the set of one or more closed first curves contains no self-crossover points. A set of continuous curves lying on the surface is provided, wherein each of the continuous second curves intersects one or more of the closed first curves and wherein the set of continuous second curves contains no self-crossover points. A set of intersection points is determined, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface. A set of crossover points is determined from the set of intersection points. A plurality of curve intervals, delimited by the determined crossover points, are selected from the set of one or more closed first curves and the set of continuous second curves in accordance with a predetermined rule to form the set of a plurality of closed loops. The set of a plurality of closed loops abuts a substantial portion of the boundary of the surface.

The applied references are not understood to disclose the foregoing features of the Claims 1, 18 and 35. In particular, the applied references are not understood to disclose at least the features of determining a set of intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface, determining a set of crossover points from the set of intersection points, and selecting a plurality of curve intervals, delimited by the crossover points, from the set of one or more closed first curves and the set of continuous second curves in accordance with a

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predetermined rule to form a set of closed loops that abuts a substantial portion of the boundary of the surface.

Specifically, Stevens concerns the projection of a curve through a non-uniform rational b-spline (NURBS) surface to define trim regions. According to Stevens, rays are projected from determined sample points on the curve into the NURBS surface. Using the intersections of these projected rays with the NURBS surface, a trim region is defined on the NURBS surface. However, the intersections on the NURBS surface are intersections between projected rays and the surface, and not intersections with the curve itself. Additionally, the intersections are not understood to lie on the boundary of the NURBS surface. In contrast, the present invention determines intersections between a set of closed first curves, defining a boundary of the surface, and a set of continuous second curves lying on the surface, where the intersections lie on the boundary of the surface.

The Office Action states that Stevens, in column 3, lines 35 et seq., discloses determining a set of crossover points within the set of intersection points. Applicant respectfully disagrees with this interpretation and asserts that this portion of Stevens merely describes the orientation of intersection points and the need to resolve overlaps on the NURBS surface when more than one curve is projected onto the NURBS surface. In fact, Applicant submits that Stevens is silent on the concept of determining crossover points, which are defined in the specification of the application as those points where an intersecting curve crosses over from one side of a curve to the other side.

The Office Action also relied on a portion of Stevens beginning in column 2, line 50. That portion describes a process of detecting transitions in the NURBS surface in which a binary subdivision process is used. This is not understood, however, to disclose

selecting curve intervals, delimited by crossover points, from a set of one or more closed

first curves and a set of continuous second curves in accordance with a predetermined rule

to form a set of closed loops.

It should also be emphasized that the effect of Stevens is somewhat different

from that of the invention. Stevens defines a process for "trimming" NURBS surfaces.

Stevens defines the trim regions by connecting the points where the projected rays intersect

with the NURBS surface. Thus, the trim regions defined in Stevens are not understood to

abut a substantial portion of the boundary of the NURBS surface. This contrasts with the

invention, where the set of plural closed loops abuts a substantial portion of the boundary of

the original surface.

Therefore, Stevens is not understood to disclose at least the features of

determining a set of intersection points where one or more closed first curves intersect

continuous second curves and which lie on the boundary of a surface, determining a set of

crossover points from the set of intersection points, and selecting a plurality of curve

intervals, delimited by the crossover points, from the set of one or more closed first curves

and the set of continuous second curves in accordance with a predetermined rule to form a

set of closed loops that abuts a substantial portion of the boundary of the surface.

Ellson, which was applied in the rejection of other claims, is not understood

to disclose or suggest anything to remedy the foregoing deficiencies of Stevens. In

particular, Ellson concerns the creation of three-dimensional or depth image font text

characters. Ellson was cited for the disclosure of modifying font characters by applying a

third dimension. However, Ellson is not understood to disclose or even suggest at least the

features of determining a set of intersection points where one or more closed first curves

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intersect continuous second curves and which lie on the boundary of a surface, determining a set of crossover points from the set of intersection points, and selecting a plurality of curve intervals, delimited by the crossover points, from the set of one or more closed first curves and the set of continuous second curves in accordance with a predetermined rule to form a set of closed loops that abuts a substantial portion of the boundary of the surface.

Accordingly, independent Claims 1, 18 and 35 are believed to be allowable over the applied references. Reconsideration and withdrawal of the § 102(e) rejection of Claims 1, 18 and 35 are respectfully requested.

Independent Claims 52, 53 and 54 concern modifying a typeface, font or character, wherein the typeface, font or character includes a set of one or more closed first curves defining a boundary of a surface of the typeface, font or character. The set of one or more closed first curves contains no self-crossover points. A set of continuous second curves lying on the surface is provided, wherein each of the continuous second curves intersects one or more of the closed first curves and the set of continuous second curves contains no self-crossover points. A set of intersection points is determined, where the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface. A set of crossover points is determined from the set of intersection points. A plurality of curve intervals, delimited by the determined crossover points, are selected from the set of one or more closed first curves and the set of continuous second curves to form a set of closed third curves. The set of closed third curves abuts a substantial portion of the boundary of the surface and forms a modified typeface, font or character.

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As discussed above with respect to Claims 1, 18 and 35, Stevens and Ellson are not understood to disclose or suggest at least the features of determining a set of intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface, determining a set of crossover points from the set of intersection points, and selecting a plurality of curve intervals, delimited by the crossover points, from the set of one or more closed first curves and the set of continuous second curves in accordance with a predetermined rule to form a set of closed loops that abuts a substantial portion of the boundary of the surface.

Accordingly, independent Claims 52 to 54 are believed to be allowable over the applied references. Reconsideration and withdrawal of the § 103(a) rejection of Claims 52 to 54 are respectfully requested.

Independent Claims 55, 56 and 57 concern modifying a typeface, font or character, where the typeface, font or character includes a set of one or more closed first curves defining a boundary of a surface of the typeface, font or character. The set of one or more closed first curves contains no self-crossover points. A set of continuous second curves lying on the surface is provided, where each of the continuous second curves intersects one or more of the closed first curves and the set of continuous second curves contains no self-crossover points. A set of intersection points is determined, where the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface. A set of crossover points is determined from the set of intersection points. Unmarked adjacent crossover points are selected from the set of determined crossover points to form a closed loop. The selected adjacent crossover points are then marked. The steps of selecting and marking

adjacent crossover points are repeated until a set of closed loops have been formed, where the set of closed loops abuts a substantial portion of the boundary of the surface and forms a modified typeface, font or character.

As discussed above with respect to Claims 1, 18 and 35, Stevens and Ellson are not understood to disclose or suggest at least the features of determining a set of intersection points where one or more closed first curves intersect continuous second curves and which lie on the boundary of a surface and determining a set of crossover points from the set of intersection points. Additionally, Stevens and Ellson are not understood to disclose or suggest selecting curve intervals, delimited by the crossover points, to form a set of closed loops that abuts a substantial portion of the boundary of the surface. Therefore, Stevens and Ellson are also not understood to disclose or suggest the feature of selecting unmarked adjacent crossover points to form a set of closed loops, where the set of closed loops abuts a substantial portion of the boundary of the surface.

Accordingly, independent Claims 55 to 57 are believed to be allowable over the applied references. Reconsideration and withdrawal of the § 103(a) rejection of Claims 55 to 57 are respectfully requested.

The other rejected claims in the application are each dependent from the independent claims discussed above and are therefore believed to be allowable over the applied references for at least the same reasons. Because each dependent claims is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing amendment and remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at Examiner's earliest convenience.

Applicant's undersigned attorney may be reached in our Costa Mesa, California, office by telephone at (714) 540-8700. All correspondence should be directed to our address given below.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO THE
SPECIFICATION

The paragraph starting on page 10, line 3, has been amended as follows:

In the next step 510, the transformed curve set C' 1122 shown in Fig. 11B is

constructed by assembling closed loops of intervals along C and P delimited by crossover

points X_n. For instance, the transformed curve set C' 1122 is assembled from the following

curve intervals shown in Fig. 11A:

a)   interval 1114 along C between X1 and X2,

b)   interval 1116 along P between X2 and X3,

c)   interval 1118 along C between X3 and X4,

d)   interval 1120 along P between X4 and X1.

The paragraph starting on page 16, line 5, has been amended as follows:

The computer 2102 itself consists of a central processing unit(s) (simply

referred to as a processor hereinafter) 2104, a memory 2106 which may include random

access memory (RAM) and read-only memory (ROM), input/output (IO) interfaces 2108, a

video interface 2110, and one or more storage devices generally represented by a block

2112 in Fig. 21. The storage device(s) 2112 can consist of one or more of the following: a

floppy disc, a hard disc drive, a magneto-optical disc drive, CD-ROM, magnetic tape or any

other of a number of non-volatile storage devices well known to those skilled in the art. Each of the components 2104 to 2112 is typically connected to one or more of the other devices via a bus 2114 that in turn can consist of data, address, and control buses.

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Amended) A method for transforming a set of <u>one or more</u> closed first curves [defined on] <u>defining a boundary of</u> a surface <u>to a set of a plurality of closed loops,</u> wherein the <u>set of one or more closed</u> first curves contain<u>s</u> no self-crossover points, the method comprising the steps of[;]<u>:</u>

[(i)] providing [a pattern comprising] a set of continuous second curves [for projection over the set of first curves upon] <u>lying on</u> the surface, wherein <u>each of</u> the <u>continuous</u> second curves <u>intersects one or more of the closed first curves and the set of</u> <u>continuous second curves</u> contain<u>s</u> no self-crossover points;

[(ii)] determining a set of intersection points [of the set of first curves with the set of second curves]<u>, wherein the intersection points are those points where the one or</u> <u>more closed first curves intersect the continuous second curves and which lie on the</u> <u>boundary of the surface</u>;

[(iii)] determining a set of crossover points <u>from</u> [within] the <u>determined</u> set of intersection points; and

[(iv)] selecting <u>a plurality of</u> curve intervals, delimited by the <u>determined</u> crossover points, from the set of <u>one or more closed</u> first curves and the set of <u>continuous</u> second curves in accordance with a predetermined rule to form <u>the set of a plurality of</u> closed loops[; wherein the closed loops form said transformed set of closed curves]<u>,</u> <u>whereby the set of a plurality of closed loops abuts a substantial portion of the boundary of</u> <u>the surface</u>.

2. (Amended) A method as claimed in claim 1, wherein said <u>selecting</u> step [(iv)] comprises the substeps of:

[(iv)(1)] ordering [all] the <u>set of</u> crossover points in accordance with a predetermined order;

[(iv)(2)] marking one of [said] <u>the</u> crossover points that is highest in the <u>predetermined</u> order and that has not been previously marked;

[(iv)(3)] determining[,] if a last marked crossover point is a first point in a [said] closed loop, and if so:

[(iv)(3)(i)] selecting [one of said] <u>a</u> curve interval[s] starting at [said] <u>the</u> first point and terminating at an unmarked crossover point; and

[(iv)(3)(ii)] marking the terminating crossover point of [said one] <u>the</u> selected curve interval; or if not:

[(iv)(3)(iii)] selecting a [further said] curve interval starting at the previous [said] terminating crossover point and terminating at an unmarked crossover point; and

[(iv)(3)(iv)] marking the current terminating crossover point of [said further] <u>the selected</u> curve interval;

[(iv)(4)] repetitively performing the <u>determining</u> substep [(iv)(3)] until [said] <u>the</u> closed loop is formed; and

[(iv)(5)] repetitively performing the <u>marking, determining and repetitively performing</u> substeps [(iv)(2) to (iv)(4)] until all possible closed loops have been formed.

3. (Amended) A method as claimed in claim 2, wherein when it is determined in said determining substep [(iv)(3)(i)] that the last marked crossover point is a first point in a closed loop, the [comprises selecting a further said] curve interval is selected from the set of one or more closed first curves, [which said one] wherein the selected curve interval starts at [a said] the first point, [and] continues in a first direction, and terminates at [the] a next adjacent unmarked crossover point.

4. (Amended) A method as claimed in claim 2, wherein when it is determined in said determining substep [(iv)(3)(iii)] that the last marked crossover point is not a first point in a closed loop, the [comprises selecting a said] curve interval is selected from the set of one or more closed first curves or the set of continuous second curves, [which] wherein the selected curve interval is the first [of said] curve interval[s] located in a second direction from the previously selected curve interval and which [selected curve interval] continues in a third direction and terminates at [the] a next adjacent unmarked crossover point.

5. (Amended) A method as claimed in claim 2, wherein said substep of ordering [said] the set of crossover points comprises ordering the crossover points according to their position along the set of one or more closed first curves in a fourth direction.

6. (Amended) A method as claimed in claim 5, wherein [said] the first direction and the fourth direction are in [the] a forward direction, [and said] the third

direction is either in [the] a positive or a negative direction, and [said] the second direction

is [the] in a backward direction.

7. (Amended) A method as claimed in claim 5, wherein [said] the first

direction and the fourth direction are in [the] a backward direction, [and said] the third

direction is either in [the] a positive or a negative direction, and [said] the second direction

is [the] in a forward direction.

8. (Amended) A method as claimed in claim 1, wherein [said] the surface is

a 2-dimensional surface.

9. (Amended) A method as claimed in claim 1, wherein [said] the surface is

a 3-dimensional surface.

10. (Amended) A method as claimed in claim 1, wherein said step of

selecting curve intervals comprises the substep of filling the plurality of closed loops with a

predetermined color.

11. (Amended) A method as claimed in claim 1, wherein said step of

providing a [pattern] set of continuous second curves, comprises the substep of[:]

generating [said pattern] the set of continuous second curves.

12. (Amended) A method as claimed in claim 1, wherein said step of providing a [pattern] set of continuous second curves, comprises the substep of[:] accessing [said pattern] the set of continuous second curves from storage.

13. (Amended) A method as claimed in claim 1, wherein said step of providing a [pattern] set of continuous second curves, comprises the substep of[:] selecting one of [many said patterns] a plurality of sets of continuous second curves in response to user input.

14. (Amended) A method as claimed in claim 11, wherein said generating [step] substep comprises inputting parameters.

15. (Amended) A method as claimed in claim 14, wherein [said] the input parameters comprise one or more of the following[;]: base shapes of the [patterns] continuous second curves, a period of the [patterns] continuous second curves, [or] and an amplitude of the [patterns] continuous second curves.

16. (Amended) A method as claimed in claim 15, wherein the amplitude of [the pattern] the continuous second curves varies throughout [the pattern].

17. (Amended) A method as claimed in claim 1, wherein the set of one or more closed first curves constitutes a character glyph of a font.

18. (Amended) An [A]apparatus for transforming a set of <u>one or more</u> closed first curves [defined on] <u>defining a boundary of</u> a surface <u>to a set of a plurality of closed loops</u>, wherein the <u>set of one or more</u> first curves contain<u>s</u> no self-crossover points, the apparatus comprising[;]<u>:</u>

providing means for providing [a pattern comprising] a set of continuous second curves [for projection over the set of first curves upon] <u>lying on</u> the surface, wherein <u>each of</u> the <u>continuous</u> second curves <u>intersects one or more of the closed first curves and the set of continuous second curves</u> contain<u>s</u> no self-crossover points;

[a] first determining means for determining a set of intersection points [of the set of first curves with the set of second curves]<u>, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface</u>;

[a] second determining means for determining a set of crossover points [within] <u>from</u> the set of intersection points; and

[a] first selecting means for selecting <u>a plurality of</u> curve intervals, delimited by the <u>determined</u> crossover points, from the set of <u>one or more closed</u> first curves and the set of <u>continuous</u> second curves in accordance with a predetermined rule to form <u>the set of a plurality of</u> closed loops[; wherein the closed loops form said transformed set of closed curves]<u>, whereby the set of a plurality closed loops abuts a substantial portion of the boundary of the surface</u>.

19. (Amended) An [A]apparatus as claimed in claim 18, wherein said first selecting means comprises:

ordering means for ordering [all] the <u>set of</u> crossover points in accordance

with a predetermined order;

[a] first marking means for marking one of [said] <u>the</u> crossover points that is

highest in the <u>predetermined</u> order and that has not been previously marked;

[a] second selecting means for selecting [one of said] <u>a</u> curve interval[s]

starting at a first point and terminating at an unmarked crossover point;

[a] second marking means for marking the terminating crossover point of

[said one] <u>the selected</u> curve interval;

[a] third selecting means for selecting a [said] curve interval starting at the

previous [said] terminating crossover point and terminating at an unmarked crossover point;

[a third marking means for marking the current terminating crossover point

of said one curve interval;]

[a] third determining means for determining[,] if a last marked crossover

point is the first point in a [said] closed loop, and if so performing the operations of [the]

<u>said</u> second selecting means and [the] <u>said</u> second marking means, or if not, performing the

operations of [the] <u>said</u> third selecting means and <u>said second</u> [third] marking means;

means for repetitively performing the operations of [the] <u>said</u> third

determining means until [said] <u>the</u> closed loop is formed; and

means for repetitively performing the operations of <u>said</u> first marking means

and <u>said</u> third determining means until all possible closed loops have been formed.

20. (Amended) <u>An</u> [A]apparatus as claimed in claim 19, wherein said second

selecting means selects [one of said] <u>the</u> curve interval[s] from the set of <u>one or more closed</u>

first curves, [which said one] <u>wherein the selected</u> curve interval starts at [a said] <u>the</u> first

point, [and] continues in a first direction, and terminates at [the] <u>a</u> next adjacent unmarked

crossover point.

21. (Amended) <u>An</u> [A]apparatus as claimed in claim 19, wherein said third

selecting means selects [a further said] <u>the</u> curve interval from the set of <u>one or more closed</u>

first <u>curves</u> or <u>the set of continuous</u> second curves, [which] <u>wherein the</u> selected curve

interval is the first [of said] curve interval[s] located in a second direction from the

previously selected curve interval and which [selected curve interval] continues in a third

direction and terminates at [the] <u>a</u> next adjacent unmarked crossover point.

22. (Amended) <u>An</u> [A]apparatus as claimed in claim 19, wherein said

ordering means orders the <u>set of</u> crossover points according to their position along the set

of <u>one or more closed</u> first curves in a fourth direction.

23. (Amended) <u>An</u> [A]apparatus as claimed in claim 22, wherein [said] <u>the</u>

first direction and <u>the</u> fourth direction are in [the] <u>a</u> forward direction, [and said] <u>the</u> third

direction is either in [the] <u>a</u> positive or <u>a</u> negative direction, and [said] <u>the</u> second direction

is [the] <u>in a</u> backward direction.

24. (Amended) <u>An</u> [A]apparatus as claimed in claim 22, wherein [said] <u>the</u>

first direction and <u>the</u> fourth direction are in [the] <u>a</u> backward direction, [and said] <u>the</u> third

direction is either in [the] a positive or a negative direction, and [said] the second direction

is [the] in a forward direction.

25. (Amended) An [A]apparatus as claimed in claim 18, wherein [said] the

surface is a 2-dimensional surface.

26. (Amended) An [A]apparatus as claimed in claim 18, wherein [said] the

surface is a 3-dimensional surface.

27. (Amended) An [A]apparatus as claimed in claim 18, wherein said first

selecting means comprises means for filling the plurality of closed loops with a

predetermined color.

28. (Amended) An [A]apparatus as claimed in claim 18, wherein said

providing means comprises means for generating [said pattern] the set of continuous second

curves.

29. (Amended) An [A]apparatus as claimed in claim 18, wherein said

providing means comprises means for accessing [said pattern] the set of continuous second

curves from storage.

30. (Amended) An [A]apparatus as claimed in claim 18, wherein said providing means comprises means for selecting one of [many said patterns] a plurality of sets of continuous second curves in response to user input.

31. (Amended) An [A]apparatus as claimed in claim 28, wherein said generating means comprises means for inputting parameters.

32. (Amended) An [A]apparatus as claimed in claim 31, wherein [said] the input parameters comprise one or more of the following[;]: base shapes of the [patterns] continuous second curves, a period of the [patterns] continuous second curves, [or] and an amplitude of the [patterns] continuous second curves.

33. (Amended) An [A]apparatus as claimed in claim 32, wherein the amplitude of the [pattern] continuous second curves varies throughout[the pattern].

34. (Amended) An [A]apparatus as claimed in claim 18, wherein the set of one or more closed first curves constitutes a character glyph of a font.

35. (Amended) A computer program product comprising a computer readable medium including a computer program for transforming a set of one or more closed first curves [defined on] defining a boundary of a surface to a set of a plurality of closed loops, wherein the set of one or more first curves contains no self-crossover points, the computer program product comprising[;]:

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providing means for providing [a pattern comprising] a set of continuous

second curves [for projection over the set of first curves upon] lying on the surface, wherein

each of the continuous second curves intersects one or more of the closed first curves and

the set of continuous second curves contains no self-crossover points;

[a] first determining means for determining a set of intersection points [of the

set of first curves with the set of second curves], wherein the intersection points are those

points where the one or more closed first curves intersect the continuous second curves and

which lie on the boundary of the surface;

[a] second determining means for determining a set of crossover points

[within] from the set of intersection points; and

[a] first selecting means for selecting a plurality of curve intervals, delimited

by the determined crossover points, from the set of one or more closed first curves and the

set of continuous second curves in accordance with a predetermined rule to form the set of

a plurality of closed loops[; wherein the closed loops form said transformed set of closed

curves], whereby the set of a plurality of closed loops abuts a substantial portion of the

boundary of the surface.

36. (Amended) A computer program product as claimed in claim 35,

wherein said first selecting means comprises:

ordering means for ordering [all] the set of crossover points in accordance

with a predetermined order;

[a] first marking means for marking [a said] one of the crossover points that

is highest in the predetermined order and that has not been previously marked;

[a] second selecting means for selecting a [said] curve interval starting at a

first point and terminating at an unmarked crossover point;

[a] second marking means for marking the terminating crossover point of the

selected curve interval;

[a] third selecting means for selecting a [said] curve interval starting at the

previous [said] terminating crossover point and terminating at an unmarked crossover point;

[a third marking means for marking the current terminating crossover point;]

[a] third determining means for determining[,] if the last marked crossover

point is the first point in a [said] closed loop, and if so performing the operations of [the]

said second selecting means and [the] said second marking means, or if not, performing the

operations of [the] said third selecting means and [third] said second marking means;

means for repetitively performing the operations of [the] said third

determining means until [said] the closed loop is formed; and

means for repetitively performing the operations of said first marking means

and said third determining means until all possible closed loops have been formed.

37. (Amended) A computer program product as claimed in claim 36,

wherein said second selecting means selects [a said] the curve interval from the set of one or

more closed first curves, [which said] wherein the selected curve interval starts at [a said]

the first point, [and] continues in a first direction, and terminates at [the] a next adjacent

unmarked crossover point.

38. (Amended) A computer program product as claimed in claim 36, wherein said third selecting means selects [a said] the curve interval from the set of one or more closed first curves or the set of continuous second curves, [which] wherein the selected curve interval is the first [of said] curve interval[s] located in a second direction from the previously selected curve interval and which [selected curve interval] continues in a third direction and terminates at [the] a next adjacent unmarked crossover point.

39. (Amended) A computer program product as claimed in claim 36, wherein said ordering means orders the set of crossover points according to their position along the set of one or more closed first curves in a fourth direction.

40. (Amended) A computer program product as claimed in claim 39, wherein [said] the first direction and the fourth direction are in [the] a forward direction, [and said] the third direction is either in [the] a positive or a negative direction, and [said] the second direction is [the] in a backward direction.

41. (Amended) A computer program product as claimed in claim 39, wherein [said] the first direction and the fourth direction are in [the] a backward direction, [and said] the third direction is either in [the] a positive or a negative direction, and [said] the second direction is [the] in a forward direction.

42 (Amended) A computer program product as claimed in claim 35, wherein [said] the surface is a 2-dimensional surface.

43. (Amended) A computer program product as claimed in claim 35, wherein [said] the surface is a 3-dimensional surface.

44. (Amended) A computer program product as claimed in claim 35, wherein said first selecting means comprises means for filling the plurality of closed loops with a predetermined color.

45. (Amended) A computer program product as claimed in claim 35, wherein said providing means comprises means for generating [said pattern] the set of continuous second curves.

46. (Amended) A computer program product as claimed in claim 35, wherein said providing means comprises means for retrieving [said pattern] the set of second curves from storage.

47. (Amended) A computer program product as claimed in claim 35, wherein said providing means comprises means for selecting one of [many said patterns] a plurality of sets of continuous second curves in response to user input.

49. (Amended) A computer program product as claimed in claim 48, wherein said input parameters comprise one or more of the following[;]: base shapes of the [patterns] continuous second curves, a period of the [patterns] continuous second curves, [or] and an amplitude of the [patterns] continuous second curves.

50. (Amended) A computer program product as claimed in claim 49, wherein the amplitude of the [pattern] <u>continuous second curves</u> varies throughout [the pattern].

51. (Amended) A computer program product as claimed in claim 35, wherein the set of <u>one or more closed</u> first curves constitutes a character glyph of a font.

52. (Amended) A method of modifying a typeface, font, or character, wherein [said] <u>the</u> typeface, font, or character comprises a set of <u>one or more</u> closed first curves <u>defining a boundary of a surface of the typeface, font, or character</u>, wherein the set of <u>one or more closed</u> first curves contain<u>s</u> no self-crossover points, the method comprises the steps of:

[projecting a pattern comprising] <u>providing</u> a set of continuous second curves [over the set of first curves] <u>lying on the surface</u>, wherein <u>each of</u> the [set of first curves] <u>continuous second curves intersects one or more of the closed first curves and the set of continuous second curves</u> contain<u>s</u> no self-crossover points;

determining a set of intersection points [of the set of first curves with the set of second curves]<u>, wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface</u>;

determining a set of crossover points [within] <u>from</u> the set of intersection points; and

selecting <u>a plurality of</u> curve intervals, delimited by <u>the determined</u> crossover

points, from the set of <u>one or more closed</u> first curves and the set of <u>continuous</u> second

curves to form a set of closed third curves, wherein [said set of closed third curves] <u>the set</u>

<u>of closed third curves abuts a substantial portion of the boundary of the surface and</u> forms a

modified [said] typeface, font, or character.

53. (Amended) <u>An</u> [A]apparatus for modifying a typeface, font, or

character, wherein [said] <u>the</u> typeface, font, or character comprises a set of <u>one or more</u>

closed first curves <u>defining a boundary of a surface of the typeface, font, or character,</u>

wherein the set of <u>one or more closed</u> first curves contain<u>s</u> no self-crossover points, the

apparatus comprising:

  means for [projecting a pattern comprising] <u>providing</u> a set of continuous

second curves [over the set of first curves] <u>lying on the surface</u>, wherein <u>each of</u> the [set of

first curves] <u>continuous second curves intersects one or more of the closed first curves and</u>

<u>the set of continuous second curves</u> contain<u>s</u> no self-crossover points;

  means for determining a set of intersection points [of the set of first curves

with the set of second curves]<u>, wherein the intersection points are those points where the</u>

<u>one or more closed first curves intersect the continuous second curves and which lie on the</u>

<u>boundary of the surface</u>;

  means for determining a set of crossover points [within] <u>from</u> the set of

intersection points; and

  means for selecting <u>a plurality of</u> curve intervals, delimited by <u>the determined</u>

crossover points, from the set of <u>one or more closed</u> first curves and the set of <u>continuous</u>

second curves to form a set of closed third curves, wherein [said set of closed third curves]

the set of closed third curves abuts a substantial portion of the boundary of the surface and forms a modified [said] typeface, font, or character.

54. (Amended) A computer program product comprising a computer readable medium including a computer program for modifying a typeface, font, or character, wherein [said] the typeface, font, or character comprises a set of one or more closed first curves defining a boundary of a surface of the typeface, font, or character, wherein the set of one or more closed first curves contains no self-crossover points, the computer program product comprising:

means for [projecting a pattern comprising] providing a set of continuous second curves [over the set of first curves] lying on the surface, wherein each of the [set of first curves] continuous second curves intersects one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

means for determining a set of intersection points [of the set of first curves with the set of second curves], wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface;

means for determining a set of crossover points [within] from the set of intersection points; and

means for selecting a plurality of curve intervals, delimited by the determined crossover points, from the set of one or more closed first curves and the set of continuous second curves to form a set of closed third curves, wherein [said set of closed third curves]

the set of closed third curves abuts a substantial portion of the boundary of the surface and

forms a modified [said] typeface, font, or character.

55. (Amended) A method of modifying a typeface, font, or character, wherein [said] the typeface, font, or character comprises a set of one or more closed first curves defining a boundary of a surface of the typeface, font, or character, wherein the set of one or more closed first curves contains no self-crossover points, the method comprises the steps of:

[projecting a pattern comprising] providing a set of continuous second curves [over the set of first curves] lying on the surface, wherein each of the [set of first curves] continuous second curves intersects one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

determining a set of intersection points [of the set of first curves with the set of second curves], wherein the intersection points are those points where the one or more closed first curves intersect the continuous second curves and which lie on the boundary of the surface;

determining a set of crossover points [within] from the set of intersection points;

selecting unmarked adjacent crossover points from the set of determined crossover points to a form a closed loop;

marking the selected adjacent crossover points; and

repetitively performing the selecting and marking steps until a set of [said] closed loops have been formed, wherein [said closed loops] the set of closed loops abuts a

substantial portion of the boundary of the surface and forms a modified typeface, font, or character.

56. (Amended) Apparatus for modifying a typeface, font, or character, wherein [said] the typeface, font, or character comprises a set of one or more closed first curves defining a boundary of a surface of the typeface, font, or character, wherein the set of one or more closed first curves contains no self-crossover points, the apparatus comprising:

means for [projecting a pattern comprising] providing a set of continuous second curves [over the set of first curves] lying on the surface, wherein each of the [set of first curves] continuous second curves intersects one or more of the closed first curves and the set of continuous second curves contains no self-crossover points;

means for determining a set of intersection points [of the set of first curves with the set of second curves], wherein the intersection points are those points where the one or more first curves intersect the continuous second curves and which lie on the boundary of the surface;

means for determining a set of crossover points [within] from the set of intersection points;

means for selecting unmarked adjacent crossover points from the set of determined crossover points to a form a closed loop;

means for marking the selected adjacent crossover points; and

means for repetitively performing the operations of [the] said selection means and said marking means until a set of [said] closed loops have been formed, wherein

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[said closed loops] <u>the set of closed loops abuts a substantial portion of the boundary of the surface and</u> forms a modified typeface, font, or character.

57. (Amended) A computer program product comprising a computer readable medium including a computer program for modifying a typeface, font, or character, wherein [said] <u>the</u> typeface, font, or character comprises a set of <u>one or more</u> closed first curves <u>defining a boundary of a surface of the typeface, font, or character</u>, wherein the set of <u>one or more closed</u> first curves contain<u>s</u> no self-crossover points, the computer program comprising:

means for [projecting a pattern comprising] <u>providing</u> a set of continuous second curves [over the set of first curves] <u>lying on the surface</u>, wherein <u>each of</u> the [set of first curves] <u>continuous second curves intersects one or more of the closed first curves and the set of continuous second curves</u> contain<u>s</u> no self-crossover points;

means for determining a set of intersection points [of the set of first curves with the set of second curves]<u>, wherein the intersection points are those points where the one or more first curves intersect the continuous second curves and which lie on the boundary of the surface</u>;

means for determining a set of crossover points [within] <u>from</u> the set of intersection points;

means for selecting unmarked adjacent crossover points <u>from the set of determined crossover points</u> to a form a closed loop;

means for marking the selected adjacent crossover points; and

means for repetitively performing the operations of [the] <u>said</u> selection

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means and <u>said</u> marking means until a set of [said] closed loops have been formed, wherein [said closed loops] <u>the set of closed loops abuts a substantial portion of the boundary of the surface and</u> forms a modified typeface[;]‚ font, or character.